REMARKS

Applicant, his principal representatives in Germany, and the undersigned have carefully reviewed the Final Office Action of March 20, 2009 in the subject U.S. patent application, together with the prior art cited and relied on in the rejection of the claim. In response, claim 72, the sole claim now actively pending in the application has been amended. As discussed with Examiner Yan during the interview held January 15, 2009, in which the courtesies extended to the undersigned by Examiner Yan are acknowledged and appreciated, it is believed that claim 72, as currently pending, is not rendered obvious by the prior art cited and relied on, taken either singly or in combination. In order to provide the Examiner with adequate time to review the subject application and to fully consider the currently amended claim 72, together with the arguments set forth in support of the allowability of that currently amended claim, a Request for Continued Examination (RCE) is being filed concurrently herewith. Reexamination and reconsideration of the application and allowance of claim 72, together with rejoinder of the currently withdrawn claims is respectfully requested.

As was discussed with Examiner Yan during the June 15, 2009 interview, the subject application describes, depicts and claims a printing press. A plurality of printing groups are arranged one after the other in the direction of a web that is being printed by the printing press. Each one of these printing groups imparts one color of a resultant multi-color printed image to the web. The first printing group thus has initial print image locations whereas the second printing group, as well as following printing groups, each has subsequent print image locations. All of the initial and subsequent print image locations contribute their one color component to the resultant multi-color printed image.

As was discussed with Examiner Yan, it is well known that the material web which is being printed is subjected to both longitudinal and lateral elongation during the printing process. These elongations are the result of several factors which cause the web to deform. These factors include the application of fluid inks and dampening agents, the stretching of the web because of the tension that is exerted on it, the amount of humidity in the printing plant and other factors. The result of such elongations of the web is a mis-alignment of the initial and subsequent print images during the formation of the resultant image. This misalignment or register error has an adverse effect on the quality of the resultant print image.

In the prior art, the typical resolution of register problems involves the generation of a test print, the determination of register errors and the relocation of the print image locations to compensate for such a register error. This is a tedious process that takes time and wastes paper. It also may require either complex systems for use in repositioning printing formes on forme cylinders, or it may require the fabrication of new printing formes having print image locations that have been changed with respect to the print image locations which were used initially, and which give rise to the register errors that were detected in the test print. Once the printing formes are re-located or re-formed, the process of printing a test print, and again checking for register errors, is done again. This esentially trail and error procedure continues until the register errors have been reduced sufficiently to result in an acceptable print quality.

In the present invention, as discussed with Examiner Yan and as set forth in currently amended claim 72 each of the first and subsequent printing groups has a plurality of print image locations on the printing forme or formes that are placed on the

forme cylinder for each such group. Each of these print image locations on each of the printing formes has its own, individual print image location length and width. These print image location lengths and widths are different from one print image location to the next print image location on each forme cylinder. They are also different with respect to each other and with respect to the same image locations on other forme cylinders in other printing groups. The Examiner is invited to review the discussion, for example, at paragraphs 007 and 020 of the Substitute Specification.

The print image locations on a forme cylinder of one of the printing groups vary from each other by at least one of a print image location length factor and a print image location width factor. A depiction of these different dimensions and factors may be seen in Fig. 2 of the drawings where there are shown several printing groups, each with a plurality of associated print image locations.

In the present invention, the longitudinal and transverse elongation to be expected in a web of material, during printing of that web of material, is estimated. Such estimates are based on prior experience with the web of material that is to be printed. It is then possible, by using the transverse elongation between of a web of material, to quite closely estimate the longitudinal and transverse elongations which the web of material will experience while it is being printed. The estimated longitudinal and transverse elongations each have elongation factors that can be expressed as a function, for example of the original dimensions of the material web. These elongation factors are used by the image application systems, which apply the print images to the printing formes, to properly position the print images in the proper print image locations before the web of material is printed. The Examiner is again requested to review the

discussion at paragraph 020 of the Substitute Specification, for example, for a discussion of this utilization of the web elongation factors in the determination of the print image locations on each printing forme that is to be positioned on the respective forme cylinders. As is recited in currently amended claim 72, the positioning of the print image locations on the printing formes to be placed on the forme cylinders is done before the web of material is printed. In other words, and in substantial contrast to the prior procedures, in the present invention, the estimated elongation of the web is used to locate the print image locations on the printing formes, which are to be attached to the forme cylinders, before any printing is done. This is not a trail and error procedure as has been done in the past.

In the Final Office Action of March 20, 2009, the Examiner who was previously assigned to the subject U.S. patent application, objected to claim 72 as having several informalities regarding inconsistent terminology. These several informalities are believed to have been corrected in currently amended claim 72.

Claim 72 was rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1182035 to Kusunoki in view of U.S. Patent No. 6,253,678 to Wentworth and further in view of U.S. Patent No. 5,806,430 to Rodi. As was noted in the course of the June 15, 2009 interview, the Kusunoki EP document corresponds to U.S. Published Patent Application No. 2002/0023558, now abandoned. The following discussion of this reference will be in the context of this U.S. published patent application.

A review of the prior Examiner's characterization of the teachings of the Kusunoki reference and a comparison of those characterizations with the actual teachings of the reference expose a number of substantial differences. It is not contested that Kusunoki

shows, most clearly Fig. 1, a plurality of printing groups P that are usable to print a multi-color image on a web as that web passes through successive ones of the printing groups. Each of these groups has two forme cylinders PC and two associated blanket cylinders. At this point however, the disclosure of the reference becomes quite different from that of the subject invention, as recited in currently amended claim 72.

It is set forth in the Office Action that Kusunoki shows at least one first printing forme on the first forme cylinder PC having at least first and second print image locations. These asserted print image locations on the asserted at least one first printing forme are identified as image areas of plates on PC_1 and PC_2.

It is to be noted that in Kusunoki, each plate cylinder PC is split longitudinally along the cylinder's axis into a first plate cylinder half PC_1 and a second plate cylinder half PC_2. Each of the plate cylinder halves PC_1 and PC_2 have one or more printing plates mounted on them, as recited at paragraphs 035. The plate cylinder halves PC_1 and PC_2 can be shifted both longitudinally and circumferentially, with respect to each other, to obtain "...fine image registration both transversely and longitudinally of the web...", as recited at column 3 in paragraph 035.

The Office Action recites that the first image location, which is the image area of the plate on PC_1 or on one half a plate cylinder PC, is different from a second print image location, as printed by the plate on the cylinder half PC_2. However, the Office Action fails to note that PC_1 and PC_2 are halves of a single plate cylinder and that the plate halves are shiftable with respect to each other. The language of currently amended claim 72 recites that the at least first and second initial print image locations on the first forme cylinder each have a print image location length and a print image

location width. These lengths and widths are different with respect to these at least first and second initial print image areas on the first forme cylinder and have length and width location factors. The discussion of the Kusunoki reference asserts that the reference describes these factors but there is no supporting teaching in the actual document. The language set forth in the discussion of the Kusunoki reference, and specifically at pages 4 and 5 of the Detailed Action, finds no support in the reference.

In the discussion of the Kusunoki reference in the Final Office Action, great reliance is placed on paragraph 0050, lines 4-6 as teaching the locations of the various print image locations, as recited in claim 72. This reference is to the EP document and corresponds to paragraph 0057 of the U.S. document. It is there recited that the images printed on one side of the web will be out of register with the other pair of image printed by the other printing groups. Continued reading of the rest of the paragraph clearly recites that such register errors are corrected by repositioning of the cylinder halves of the various plate cylinders. There is no teaching, or suggestion in the Kusunoki reference that the print image locations of one plate cylinder will be arranged on their plate cylinders with differing print image location lengths and widths as a function of length factors and width factors.

The same two lines of the Kusunoki reference are also relied on as teaching the provision of image application systems that are usable to form the print image locations on the plates which are carried by the plate cylinder halves PC_1 and PC_2. It is not disputed that some type of image application system has to be used to apply the various print images to the plates at the print image locations.

The same two lines, 4-6, of paragraph 0050 of the EP version of the Kusunoki reference also are relied on to assert that the spacings of the print image locations on the plates caused by the plate cylinder halves PC_1 and PC_2 are arranged using the image application system with image lengths and width location factors being a function of one of longitudinal and transverse alignment. At the risk of appearing skeptical, it is difficult for the undersigned to understand how two lines of one paragraph of the Kusunoki reference can render obvious so many features of the printing press recited in currently amended claim 72.

At page 6 of the Detailed Action, the prior Examiner admitted that Kusunoki did not teach that the adjustment of the axial and circumferential misalignment of the plate cylinder halves PC_1 and PC_2 was dependent on elongation features of the web. Thus, Kusunoki fails to take into consideration one of the very relevant features of the subject invention. It is well-known that register errors occur. It is also well known that printing formes can be movably supported by forme cylinders to provide a process for attempting to correct such register errors. Kusunoki teaches the process of providing a plate cylinder with two independent cylinder halves and moving one cylinder half with respect to the other cylinder half in an effort to remedy register issues. Unfortunately, that is not what the present invention does.

The Wentworth patent, as discussed with Examiner Yan, is a classic example of a trial and error approach to the correction of register errors. The Wentworth reference does discuss the fact that the web grows as it is being printed. However, the Office Action then attempts to assert that the image application systems form the print image locations on the forme cylinders depended on a formula that considers the longitudinal

elongation factor and the transverse elongation factor of the web. That assertion finds no support in the reference.

In the Wentworth patent, there is described a process for correcting register errors which begins with the use of a test press run, as recited starting at column 4, lines 16-20. This test press run uses test plates to produce a printed web. Once the test run is completed, the printed components on the web are inspected, as discussed at lines 40-43 of column 4 for the purpose of determining degrees of misregistration. The misregistration is measured using a high power magnifying glass, as recited at lines 50-53 of column 4. The amount of misregistration is then used to form a second set of printing plates, as discussed at column 6, lines 26-30. This second set of plates are used to print the product during the production press run. As further recited at column 6, lines 38-40, this process can be repeated as many times as necessary to obtain data sets which result in the printing of image components that are within an acceptable amount of register.

The formula set forth at the top of column 6 of the Wentworth reference has nothing to do with the forming of print images on a forme cylinder in accordance with at least one of a longitudinal elongation factor or a transverse elongation factor. As discussed at the bottom of column 5 of the Wentworth reference, there is generally one point on a press cylinder which is usable as a center print for purposes of alignment. In the case where there is only one printing plate on a press cylinder, an amount of the plate offset can be calculated using the formula set forth on the top of column 6 of the reference. The application of this formula would result in a value by which a particular image would be shifted. This formula does not consider any longitudinal and/or

transverse elongation factors of the web and clearly does not consider these factors in the context of determining print image locations of at least two print images in at least one first printing forme positionable on a forme cylinder. In Wentworth, the amount of register error is first determined from test runs. The plate locations are changed as a function of those register errors and a second test is conducted. The process is repeated until the register errors are within appropriate limits. There is no discussion in Wentworth of locating the print image locations on the printing formes before the web is actually printed and based on estimated longitudinal and transverse elongations of the web of material. Thus, Wentworth does not provide any of the teachings of the subject invention, as recited in currently amended claim 72, that are missing from the Kusunoki reference.

The third reference, U.S. Patent No. 5,806,430 to Rodi was relied on as teaching the use of an image application system prior to printing of the material to be printed. Again, a careful reading of the Rodi documents shows that it fails to support the assertions made by the previous Examiner in the Final Office Action.

It is initially to be noted that Rodi is directed primarily to an ink jet printing system. A plurality of digital printing units 1, which are disclosed as being ink jet arrays or printing units with a writing head, as recited at column 5, lines 11 and 12, are located above the path of travel of a web 2. These ink jet printers are calibrated by a program such as POSTSCRIPT. Register errors are discussed in Rodi and are determined by carrying out a calibrating run, as recited at column 6, lines 14 and 15. An evaluation circuit determines the amount of register errors and generates error signals. Those error signals are then usable by image an processor 6 to change the image which will be

applied using the ink jet arrays or the printing units with a print head. It is to be noted that again, as was the case in the Kusunoki and Wentworth references, the determination of register errors is carried out in the context of a calibration run; i.e. yet another trial and error solution.

The Rodi reference does also briefly mention that the printing substrate may be a premounted printing forme to which images are applied using computer-to-press technology. In this process, the printing formes are firmly mounted to the cylinder and are then exposed. Register errors are corrected by manipulation of the image data prior to delivery of that data to the register image processor. However, that image data is still generated based on a calibrating run. There is no discussion in Rodi regarding any modification of the image data to be applied to the printing plates as a function of estimated elongations in the web of material and prior to the printing of the web of material. The discussion at page 7 of the Detailed Action in that regard finds no support in the disclosure of the Rodi reference.

As was discussed with Examiner Yan during the course of the interview, claim 72 has been amended to remove the limitation that the image application systems are adapted to form the print image locations on the printing formes while those formes are on the forme cylinders. That limitation is not required by the subject disclosure and was added to claim 72, when it was initially drafted. In the Substitute Specification, paragraph 033 was originally amended, as was Fig. 1 of the drawings, to show the image application system 40 as being associated with each forme cylinder. That is not necessarily the case, as is evident by a review of, for example, paragraph 032 of the Substitute Specification. Paragraph 033 is being amended a second time to reflect the

fact that the image application system 40, which was added to originally filed Fig. 1 by the undersigned, can be associated with the respective forme cylinders or can be a separate system. The limitation that the image application system is adapted to form the print image locations on the printing forme, while those printing formes are on the forme cylinders has been removed, as discussed above.

Claims 74, 75, 77-81 and 83-106 remains withdrawn from consideration pending the indication of the allowability of claim 72. As was indicated in the Restriction Requirement mailed on June 4, 2008, claim 72 links the inventions recited as being set forth in Groups 1-30; i.e. claims 72-106. Upon the indication of the allowability of claim 72, it is requested that these currently withdrawn claims be rejoined.

SUMMARY

Claim 72 has been amended to more clearly set forth the believed patentable printing press in accordance with the present invention. One paragraph of the Substitute Specification has been revised to rectify a prior incorrect assertion, which was made by the undersigned, without descriptive intent, in the prior Amendment. A Request for Continued Examination (RCE) is being filed concurrently to provide the Examiner with sufficient time to fully consider this Second Amendment.

Allowance of the claims and passage of the application to issue, is respectfully requested.

Respectfully Submitted,

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